

REMARKS/ARGUMENTS

Favorable reconsideration of this Application, as presently amended and in light of the following discussion, is respectfully requested.

This Amendment is in response to the Office Action mailed on April 27, 2005. Claims 1, 5-13, 15, 16, and 19-31 are pending in the Application, Claims 1, 3, 5-13, 15-17, and 19 stand rejected and Claims 4, 14, and 18 stand objected to as being dependent upon rejected base claims, but would be allowed if rewritten in independent form. Claims 1, 5, and 16 are amended, Claims 2-4, 14, 17, and 18 are cancelled without prejudice or disclaimer, and new Claims 20-31 are added by the present Amendment.

The indication of allowable subject matter is noted with appreciation. In response, Claim 1 has been amended with the subject matter of Claims 3 and 4, Claim 16 has been amended with the subject matter of Claims 17 and 18, and new Claim 22 is presented, reciting the subject matter of Claims 1, 12, 13, and 14. As such, Applicants believe that Claims 1, 5-13, 15, 16, 19, and 22 are in condition for allowance.

Summarizing the outstanding Office Action, Claims 1, 3, 6-12, 15, 16, and 19 were rejected as being unpatentable over Mosser (U.S. Patent No. 4,606,967) in view of Yamamoto (European Patent No. EP 0489427).

In view of the present amendment to the claims based on the allowable subject matter, this rejection is now moot. However, new Claim 20 recites in independent form the subject matter of Claims 1 and 12. New Claim 21 depends from Claim 20. Thus, support for new Claims 20 and 21 is self-evident. In order to expedite the prosecution process, Applicants offer the following remarks in support of the patentability of Claims 20 and 21.

Applicants respectfully submit that Mosser and Yamamoto, neither individually nor in any combination, support a *prima facie* case of obviousness of the invention recited in the

new Claim 20. This is so because there is no motivation to combine these two references except based on the use of impermissible hindsight reconstruction.

According to a feature of the invention as set forth in Claim 20, *a powder material for forming an abradable coating* is recited, comprising, among other features, *manganese or calcium representing 5% to 20% by weight of the metal powder*.

As noted in Applicants' specification, conventional powder materials for forming abradable seals based on silicon possess abrasability and erosion characteristics that are satisfactory, but their suitability for use at high temperatures is limited. As for materials based on chromium and nickel, they are relatively stable and good at withstanding high temperatures; however, their abrasability and erosion characteristics are less satisfactory, particularly when they are deposited facing compressor blades made of non-coated titanium alloy.¹

The powder material of the present invention can be used to, for example, provide seals presenting, among others, at least the following advantageous characteristics: (1) acceptable blade tip wear; (2) reduced heating of the blades when the blades contact the seal; (3) good resistance to erosion caused by the flow of gas traveling in the flow section of a compressor; (4) conserved abrasability in an environment that is oxidizing and corrosive; (5) wear residues that reduce obstruction to the orifices for cooling the compressors; and (6) good resistance to high temperatures with reduced unwanted hardening, brittleness, and crumbling, among others.²

Mosser is a nonanalogous reference related to chromate/phosphate coating compositions which are erosion, corrosion, and abrasion-resistant.³ To the contrary, as

¹ See, for example, Specification, page 3, lines 6-33.

² Id., page 2, line 15 – page 3, line 5.

³ Mosser, col. 1, lines 7-9.

explained above, the present invention is concerned with a powder material for forming an *abradable* coating. By definition, an abradable material is a material which is subject to abrasion and erosion. Thus, the erosion-resistant material of Mosser is not an abrasive, or erosive, material as recited in Claim 20.

In addition, the outstanding Office Action acknowledges that Mosser fails to teach or disclose a metal power based on aluminum and containing manganese or calcium in the amount from 5-20% by weight of the metal power. The nonanalogous reference of Yamamoto is cited as remedying that deficiency.

Applicant respectfully traverses the obviousness rejection based on Mosser and Yamamoto because there is insufficient evidence for a motivation to modify the Mosser composition by incorporating therein the composition of Yamamoto for the following reasons.⁴

The outstanding Office Action states that the proposed modification would have been obvious because "utilizing such powder would improve the resistance to corrosion and the weldability and formability thereof as taught by Yamamoto et al." The Office further states that the "determination of an optimum or preferred amount of Mn and other alloying elements in the alloy coating to obtain desired result would have been obvious to one skilled in the art." The record, however, fails to provide the required evidence of a motivation for a person of ordinary skill in the art to perform such modification. Furthermore, Yamamoto teaches away from Applicants' invention.

While the Yamamoto patent may provide a reason for using the disclosed composition to a surface-coated aluminum material for corrosion protection and good formability and

⁴ See MPEP 2143.01 stating "[o]bviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art," (citations omitted). See also MPEP 2144.08 III stating that "[e]xplicit findings on motivation or suggestion to select the claimed invention should also be articulated in order to support a 35 U.S.C. 103 ground of rejection. . . . Conclusory statements of similarity or motivation, without any articulated rational or evidentiary support, do not constitute sufficient factual findings."

weldability to be used in automobiles, aircraft, appliances, and buildings, it fails to suggest why a person of ordinary skill in the art would be motivated to incorporate such composition in the chromate/phosphate coatings disclosed by Mosser. In particular, Yamamoto uses the disclosed composition to increase the corrosion resistance of aluminum in a saline environment so as to withstand pit and filiform corrosion. Yamamoto, however, does not suggest that the disclosed composition would work in the chromate/phosphate coatings disclosed by Mosser, much less “to improve the resistance to corrosion and the weldability and formability” in such coatings. The Yamamoto patent does not state that the chromate/phosphate coatings of Mosser need “to improve their resistance to corrosion and their weldability and formability.”

Mosser states that its composition of chromate/phosphate coatings already achieves the goal of providing coatings that are erosion, corrosion, and abrasion-resistant and discloses an extensive list of materials that can be used in the disclosed coatings. For example, “aluminum rare earth alloys, aluminum silicon alloys, aluminum lithium, aluminum copper base alloys like aluminum bronze, aluminum magnesium, aluminum zinc, and aluminum manganese can be used.”⁵ “The metal powders used in the coatings and the coating compositions of the invention of Mosser may contain other metals such as nickel, cobalt, silicon, zinc, and magnesium.”⁶ “In addition to the aluminum powder there may be included also ceramic powders, such as aluminum oxide, silicon dioxide, chromium oxide.”⁷ “Likewise, refractory compounds may be added to the aluminum powders, such compounds as nitrides, silicides, carbides, borides, such as boron carbide, silicon carbide, tungsten

⁵ Mosser, col. 6, lines 34-37.

⁶ *Id.*, line 48.

⁷ *Id.*, lines 54-56.

carbide, titanium boride, molybdenum disilicide, and boron nitride.”⁸ And, “lubricants such as graphite or molybdenum disulfide may be used too.”⁹ However, Manganese and Calcium were not taught or disclosed. In fact, Mosser appears to be silent about these two substances.

Thus Mosser and Yamamoto do not provide the motivation to perform the proposed modification of the Mosser composition. In other words, an attempt to bring in the isolated teaching of Yamamoto’s composition having Manganese into the coating composition of Mosser would amount to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.¹⁰ While the required evidence of motivation to combine need not come from the applied references themselves, the evidence must come from *somewhere* within the record.¹¹ In this case, the record fails to support the proposed modification of the chromate/phosphate coatings of Mosser.

The U.S. Court of Appeals for the Federal Circuit recently vacated a rejection under 35 U.S.C. 103(a) based on similar grounds.¹² In vacating a rejection, the Court stated:

The record reflects that the examiner and the Board have managed to find motivation for substituting one type of memory for another *without providing a citation of any relevant, identifiable source of information justifying such substitution*. The statements made by the Examiner, upon which the Board relied, amount to no more than conclusory statements of generalized advantages and convenient assumptions about skilled artisans. At least under the MPEP then in effect, such statements and assumptions are inadequate to support a finding of motivation, which is a factual question that

⁸ *Id.*, lines 59-62.

⁹ *Id.*, lines 67 and 68.

¹⁰ See In re Ehrreich 590 F.2d 902, 200 USPQ 504 (CCPA, 1979) (stating that patentability must be addressed “in terms of what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art,” and that one “must consider the entirety of the disclosure made by the references, and avoid combining them indiscriminately.”)

¹¹ In re Lee, 277 F.3d 1338, 1343-4, 61 USPQ2d 1430 (Fed. Cir. 2002) (“The factual inquiry whether to combine references ... must be based on objective evidence of record. ... [The] factual question of motivation ... cannot be resolved on subjective belief and unknown authority. ... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency’s conclusion”).

¹² In re Beasley, 2004 U.S. App. LEXIS 25055 (Fed. Cir. December 2004).

cannot be resolved on "subjective belief and unknown authority." *Lee*, 277 F.3d at 1344. Under such circumstances, with respect to core factual findings, "the Board ***must point to some concrete evidence in the record in support***" of them, rather than relying on its assessment of what is "well recognized" or what a skilled artisan would be "well aware." (emphasis added)

The Office is respectfully reminded that the position that the chromate/phosphate coatings of Mosser could be modified to arrive at the claimed composition is insufficient to establish a *prima facie* case of obviousness.¹³

In addition, as to the statement made about optimizing amounts, "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation."¹⁴ The record is devoid of any evidence, let alone substantial evidence, to support the unsubstantiated conclusion that the amount of Manganese is a result-effective variable, thus the assertion that "determination of an optimum or preferred amount of Mn and other alloying elements in the alloy coating to obtain desired result would have been obvious to one skilled in the art" is unfounded and unsubstantiated.

In addition, even if assuming *in arguendo* that a motivation to combine the references exists and that the amount of Manganese is a result-effective variable, Yamamoto discloses that the preferred amount of Mn in the disclosed composition is between 25 and 35% by weight,¹⁵ which seems to have already been optimized and to be outside of the claimed range of 5 to 20% as recited in Claim 20. In other words, Yamamoto teaches away from

¹³See MPEP 2143.01 stating that the "fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness"; see also same section stating "[a]lthough a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so,'" (citation omitted).

¹⁴ See, for example, MPEP § 2144.05, citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

¹⁵ Yamamoto, page 4, lines 23 and 24.

Applicants' invention. The Office is respectfully reminded that "a *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention."¹⁶

Accordingly, based at least on the above-noted remarks, Mosser and Yamamoto, neither individually nor in any combination, render obvious the invention recited in Claim 20. Claim 21 should be allowed, among other reasons, as depending either directly or indirectly from Claim 20, which should be allowed as just explained.

Finally, Applicants have submitted new Claims 23-31, which find non-limiting support on the subject matter originally disclosed on page 4, line 1-page 5, line 22 of the Disclosure. Therefore, new Claims 23-31 are not believed to raise a question of new matter.¹⁷ Because new Claims 23-31 incorporate by reference features of independent claims that are allowable as explained, in view of the above-presented remarks and allowable subject matter, Applicants respectfully submit that new Claims 23-31 should be allowed.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1, 5-13, 15, 16, and 19-31 is earnestly solicited.

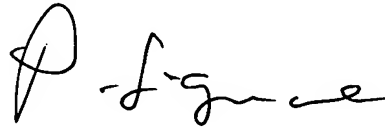
¹⁶ MPEP § 2144.05, citing *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

¹⁷ See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representatives at the below listed telephone number.

Respectfully submitted,

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